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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,414	02/11/2004	Alberto Menache	MENAH-66588	4314

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EXAMINER

MULL, FRED H

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/777,414	Applicant(s) MENACHE ET AL.	
	Examiner Fred H. Mull	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 01 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-73 is/are pending in the application.
- 4a) Of the above claim(s) 43-53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 and 54-73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/3, 3/29, 10/1/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-42 and 54-73, drawn to location determination, classified in class 342, subclass 463.
 - II. Claims 9-10, 18, and 43-53, drawn to a transmitter with a protective layer that automatically activates upon removal of the protective layer, classified in class 340, subclass 825.49.
2. Claims 9-10 and 18 link(s) inventions I and II. The restriction requirement between the linked inventions is subject to the nonallowance of the linking claim(s) 10 and 18. Upon the allowance of the linking claim(s), the restriction requirement as to the linked inventions shall be withdrawn and any claim(s) depending from or otherwise including all the limitations of the allowable linking claim(s) will be entitled to examination in the instant application. Applicant(s) are advised that if any such claim(s) depending from or including all the limitations of the allowable linking claim(s) is/are presented in a continuation or divisional application, the claims of the continuation or divisional application may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

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The inventions are distinct, each from the other because of the following reasons:

3. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as determining location with a standard transmitter. See MPEP § 806.05(d).
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
5. During a telephone conversation with Joel Voelzke on December 17, 2004 a provisional election was made without traverse to prosecute the invention of I, claims 1-42 and 54-73. Affirmation of this election must be made by applicant in replying to this Office action. Claim 43-53 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

35 USC § 112 6th Paragraph

The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

6. Claim(s) 2 and 66-73 is/are interpreted by the examiner as invoking 35 USC 112 6th paragraph (means plus function). See MPEP § 2181.

Specification

7. The disclosure is objected to because of the following informalities:
- In ¶ 1, line 2, after "2003", --, now patent US 6,831,603 B2-- should be inserted.
- In ¶ 7, line 5, "6,580,511" should be replaced by --6,580,811--.
- Appropriate correction is required.

Claim Objections

8. Claim(s) 35 is/are objected to under 37 CFR 1.75. The claim(s) recites the limitation "the marker tag" in line 5. There is insufficient antecedent basis for this limitation in the claim. Correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 6, 11, 14-16, 19, 21-23, 29-32, 34-40, 66, 68-69, and 72-73 are rejected under 35 U.S.C. 102(b) as being anticipated by IDS document Boyd (US 6380894 B1). Reference will also be made to Belcher (US 6121926 A), which is incorporated-by-reference into Boyd (col. 1, 1st ¶), and is thus part of the disclosure of Boyd.

In regard to claims 1, 19, 23, and 35, Boyd discloses at least four stationary radio frequency receivers around a defined area (10, Fig. 4; col. 5, lines 20-23);

a first radio frequency transmitter disposed at a determinable position relative to the receivers (16R);

a plurality of radio frequency transmitters affixed to at least one movable object within the vicinity of the defined area (16; col. 5, lines 24-26);

the receivers receiving radio frequency signals transmitted by the transmitters (col. 5, lines 27-31); and

a processing system for processing the signals received by the transmitters to determine positional information regarding the movable object within the vicinity of the defined area, the processing system using signals received from the first transmitter as a reference for determining positions of the transmitters affixed to the movable object (22).

In regard to claim 2, Boyd further discloses means for determining said first transmitter position relative to the receivers (col. 5, line 58 to col. 6, line 10).

In regard to claim 3, Boyd further discloses the stationary receivers have respective receiver clocks, and the stationary receivers do not have circuitry which synchronizes their receiver clocks from one stationary receiver to another (abstract; col. 5, lines 60-64).

In regard to claim 6, Boyd further discloses at least one movable object comprises at least two relatively moving objects (col. 5, lines 24-26) within a product manufacturing process, and wherein the method further comprises using said

determined position information to analyze said product manufacturing process (col. 2, lines 1-37; col. 5, line 23). See also Belcher (col. 2, line 65 to col. 3, line 7).

In regard to claims 11, 14-15, 21-22, and 37, Boyd further discloses each of the transmitters affixed to the object transmits a synchronization code and a tag identification code, the tag identification code being unique to each tag, the synchronization code and the tag identification code being modulated onto a carrier frequency (col. 5, lines 27-31).

In regard to claim 16, Boyd uses no Global Positioning System (GPS) data or inertial sensor data transmitted by the transmitters on the object (disclosure of Boyd).

In regard to claims 29-32, 36, 66, 68, 69, and 73, Boyd further discloses neither the transmission of the signal nor the receiving of the signal at a given receiver is controlled in time with respect to any of the other receivers (abstract, 1st sentence; col. 5, lines 60-64). Belcher discusses in more detail the tag's random/uncontrolled transmission times (e.g. col. 2-4).

In regard to claim 34, Boyd further discloses the transmitter transmits at a duty cycle of less than 5% (Belcher: col. 3, lines 38-43), where being on for 100 milliseconds every 10 seconds or more is less than 5%.

In regard to claim 38, Boyd further discloses the waveform processing includes correlating sampled values of each of the received waveforms against samples of stored tag identification codes waveforms; and identifying a particular marker tag as the marker tag that transmitted a particular received waveform based on a high correlation

between said samples of said particular received waveform and a particular stored tag identification code waveform (col. 2, lines 42-49).

In regard to claim 39, Boyd further discloses the correlating is performed using a digital signal processing microcircuit (col. 5, lines 3-7). See also Belcher (340, Fig. 6).

In regard to claim 40, Boyd further discloses the stored tag identification code waveforms have been filtered to approximate an idealized tag identification code waveform as it would actually be received at said sensors (Belcher: 307, Fig. 6; col. 6, line 65 to col. 7, line 62).

In regard to claim 72, Boyd further discloses the transmitter transmits at a duty cycle of less than 1% (Belcher: col. 3, lines 38-43), where being on for 100 milliseconds every 10 seconds or more is less than 1%.

10. Claims 29-31, 66, and 73 are rejected under 35 U.S.C. 102(b) as being anticipated by IDS document Daver (US 5513854 A).

In regard to claims 29 and 66, Daver discloses placing at least one transmitter on at least one object (col. 4, lines 35-40), the transmitter transmitting a radio frequency signal (col. 4, lines 35-40); receiving the signal at a plurality of radio frequency receivers (col. 4, lines 39-42); wherein neither the transmission of the signal nor the receiving of the signal at a given receiver is controlled in time with respect to any of the other receivers (col. 4, lines 41-49, where synchronization is unnecessary for location by goniometric position determination); processing timings of the signal received at the receivers to track movement of the object (col. 5, lines 1-31; col. 6, lines 47-64).

In regard to claim 30, Daver further discloses the movement takes place and is effectively tracked within a capture zone having horizontal dimensions of larger than 25 meters by 25 meters (col. 7, lines 25-29), where an NFL football field is 300 feet by 160 feet, and thus 91.44 meters by 48.768 meters.

In regard to claim 31, Daver further discloses the movement takes place and is effectively tracked within a capture zone having a diagonal dimension of at least 100 meters (col. 7, lines 25-29), where an NFL football field is 340 feet diagonally, and thus 103.632 meters diagonally. It is even longer if you consider the two 10 yard end-zones as part of the field.

In regard to claim 73, Daver further discloses the marker transmitters comprise a plurality of groups of marker transmitters, a first group of marker transmitters transmitting spread spectrum signals within a first frequency band, a second group of marker transmitters transmitting spread spectrum signals within a second frequency band, the first and second frequency bands being separated by a guard band (col. 4, lines 53-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 4, 7-8, 24, 27-28, 54-65, and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd in further view of Kivolowitz, or, alternatively, over Kivolowitz in view of Boyd.

In regard to claims 4, 24, and 27-28, Boyd fails to disclose using said determined position information to position a computer generated object within a motion picture scene.

Kivolowitz discloses using sensor determined position to position a computer generated object within a motion picture scene (col. 5, lines 46-64).

It would have been obvious to apply the positioning system of Boyd to as many applications as possible in order to increase the sales of the system of Boyd.

Kivolowitz fails to disclose radio positioning, instead using inertial positioning (abstract). However, the position from inertial positioning sensors develop increasing errors over time (see Weston, p. 57, section 4, 1st ¶).

It would have been obvious to use the radio positioning system of Boyd in order to obtain position measurements that remain accurate over time.

In regard to claim 7, 54-58, 61-65, and 67, Kivolowitz further discloses the movable object is a motion picture camera (10, Fig. 1), and wherein the plurality of transmitters affixed thereto comprise at least 3 transmitters disposed at positions on the camera sufficient to determine pitch, yaw, and roll of the camera (Fig. 1; col. 3, lines 36-45).

In regard to claims 8 and 59-60, Kivolowitz further discloses the motion picture camera is a hand held motion picture camera (col. 2, lines 43-48).

12. Claims 5 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd and Kivolowitz, or, alternatively, over Kivolowitz and Boyd, as applied to claims 4 and 24, and in further view of either of Maeda and Katzenberger.

Maeda (col. 1, lines 13-19) and Katzenberger (col. 1, lines 18-22) disclose that computer generated objects can be generated for video games in the same manner they are for motion pictures.

13. Claims 9-10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd in further view Jeon.

Boyd fails to disclose activating the RF transmitters by removing a backing layer and exposes an adhesive layer.

Jeon discloses removing a backing layer and exposing an adhesive layer activating a device (col. 1, lines 28-32).

It would have been obvious to use the method of Jeon in order to save battery power by only activating the transmitters when they are ready to be used for positioning.

14. Claims 12-13 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd in further view of Dierendonck.

In regard to claim 12, Boyd further discloses transmitter signals are spread spectrum signals (col. 5, lines 27-44).

Dierendonck discloses Newman-Hoffman codes are spreading codes which reduce the effect of narrowband interference on the signals they spread (p. 38). It

would have been obvious for Boyd to use the Newman-Hoffman codes of Dierendonck increase the detectability of his transmitter signals.

In regard to claims 12, 33, Dierendonck further discloses the codes are selected for low pairwise cross-correlation values (p. 38).

15. Claims 17 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd in further view of any one of Aman, Cameron, and Rodman.

Boyd fails to disclose the transmitter transmission rate is an integer multiple of 24 tps and 30 tps, or a transmission rate of 240 tps.

Aman (§ 132), Cameron (col. 13, lines 26-29), and Rodman (p. 5, col. 1, lines 31-59) disclose a transmission rate that is both an integer multiple of 24 tps and 30 tps, and 240 tps, to have a transmission rate high enough to capture real-time events, such as a hockey game.

16. Claims 20 and 70-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd in further view of Panasik and Allison.

Boyd fails to disclose pseudoranges.

Panasik discloses that it is well known to for ground based positioning systems to use pseudorange positioning (§ 41).

Allison discloses a GPS method computing respective reference tag pseudorange measurements between the reference tags and the sensors; computing respective marker tag pseudorange measurements between each of the marker tags

and the sensors; computing respective single differences between the marker tag pseudorange measurement and the reference tag pseudorange measurement for each of the sensors; computing respective double differences between the single differences for pairs of sensors; using the double differences to form a set of simultaneous equations; and solving the simultaneous equations to compute the position of the marker tag (abstract).

It would have been obvious that the satellite based positioning method of Allison could be performed in a ground based positioning system of Boyd based on the teaching of Panasik that pseudorange positioning can be performed in ground based positioning systems, and is known to be performed there.

17. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boyd.

It is well known to use spreading codes for different transmitters that are selected for low pairwise cross-correlation values in order to reduce the chances that the receivers will misidentify the transmitter and hence give an incorrect location for an object of interest.

18. Claims 32 and 69 rejected under 35 U.S.C. 103(a) as being unpatentable over Daver.

Daver discloses that a transmitter is associated with each player on the field (col. 7, lines 25-29). Further, one would expect that each player that is not actually on the playing area at the time, but, for example, along the sidelines, would have their own

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transmitter, rather than having football players passing transmitters between each other between plays. This would also allow identifying the specific player who performs a specific play. There are large sporting events, such as the Olympic, individual nation Olympic trials, and other such events, where 1000 or more athletes participate. For example, 11,099 athletes participated in the 2004 Olympics in Athens. Thus, since sporting events exist where more than 1000 athletes participate, it would have been obvious to use this system with as many as 1000 transmitters.

19. The examiner also finds the following reference(s) relevant:

Romanoff, which is similar to Kivolowitz.

Wang, Shioda, Rabinowitz '518, and Rabinowitz '565, which all disclose ground based pseudorange positioning systems.

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 571-272-6975. The examiner can normally be reached on M-F 9:00 - 5:00.

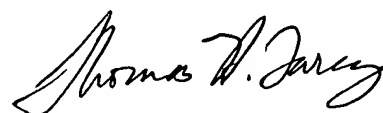
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 571-272-6979. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull
Examiner
Art Unit 3662

fhm



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